

REMARKS

Initially, it is noted that new Figure 19 has been amended for clarification. No new matter has been provided. The Examiner has objected to claim 48 as being labeled “withdrawn” instead of “cancelled.” Per the Examiner’s request, Applicant has amended the claim accordingly. Withdrawal of the Examiner’s objection to now cancelled claim 48 is respectfully requested.

The Examiner has rejected to claims 1, 3, 10, 12-13, 15-16, 43-44 and 67 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. More specifically, the Examiner has objected to the term “overlapping” being used to describe the relationship between the first and second images as defined in the claims. While Applicant believes that such limitation is inherent in the specification, reference to the “overlapping” of the images in the noted claims has been removed. Consequently, withdrawal of the Examiner’s rejection under 35 U.S.C. § 112, first paragraph, is respectfully requested.

The Examiner has also rejected claims 1, 3, 10, 12-13, 15-16, 43-44, 47-50 and 67 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that applicant regards as the invention. More specifically, in claim 1, the Examiner believes the phrase “the second image being dependent on the first image” is indefinite since the nature of the dependency is unclear. Applicant has amended claim 1 to more clearly define the invention for which protection is sought. Referring to claim 48, Applicant has amended the identification of the status of such claim as noted above. With respect to claim 67, Applicant has re-written such claim to overcome the lack of antecedent basis. Finally, with respect to claim 47, the Examiner believes the phrase “common field of view” is indefinite. As such, Applicant has amended claim 47 to more clearly define the invention for which protection is sought. In view of the foregoing, withdrawal of the Examiner’s rejection of claims 1, 3, 10, 12-13, 15-16, 43-44, 47-50 and 67 under 35 U.S.C. § 112, second paragraph, is respectfully requested.

The Examiner has rejected claims 1, 3, 10, 12, 13, 43, 44, 47, 49, 50, 54-57, 61-63, 66 and 67 under 35 USC 103(a) as being anticipated by Kaiya, U.S. Patent 5,178,130 in view of Torii, U.S. Patent 6,482,149. Claims 15, 16, 64 and 65 have been rejected under 35 USC 103(a) as being unpatentable over the Kaiya '130 patent in view of the Torii '149 patent, and further in view of Yoon, U.S. Patent 6,066,090. Finally, the Examiner has rejected claims 1, 3, 10, 12, 13, 15, 16, 43, 44, 47, 49, 50, 54-57, 61, 62, and 64-67 under 35 USC 103(a) as being unpatentable over the Yoon '090 patent. As hereinafter described, applicant has amended the pending claims to more particularly define the invention for which protection is sought. Reconsideration of the examiner's rejections is respectfully requested in view of the following comments.

Claim 1 defines an endoscope including a shaft having a diameter, extending along a longitudinal axis, having a distal end receivable in a hollow organ and a proximal end and defining a hollow channel therethrough. The shaft further includes a steering mechanism for moving the distal end of the shaft from a first position to a second position. A first lens is fixedly attached adjacent to the distal end of the shaft for receiving a first image in a first direction. The first direction is generally forward and parallel to the longitudinal axis of the shaft and the first image is generally a circumferential view of the hollow organ. A catheter is receivable in the hollow channel of the shaft for extension and retraction therethrough. The catheter including a distal tip, a proximal section and a bending section therebetween that retroflexes the distal tip from a first position to a second position upon extension of the distal tip of the catheter from the hollow channel. A second lens is adjacent the distal end of the catheter and is receivable in the hollow channel of the shaft. The second lens receives a second image in a second direction a generally 180 degree angle to the first direction with the catheter in the second position. The second direction is generally parallel to the longitudinal axis of the shaft and the second image provides a generally circumferential view of the hollow organ. The first image defines a forward image of the hollow organ and the second image defines a rear image of the hollow organ. The second direction is dependent on the first direction. The diameter of the shaft is greater than the distance between the distal tip of the catheter and the proximal section of the catheter with the catheter in the second position. The shaft is insertable into the hollow body organ under image guidance of the first image and the steering mechanism of the shaft.

As hereinafter described, none of the cited references show or suggest an endoscope including:

- 1) a shaft having a first image lens fixedly disposed at distal end thereof;
- 2) a catheter receivable in a hollow channel of the shaft for extension and retraction therethrough and which includes a second image lens disposed at distal end; and
- 3) a bending section of the catheter retroflexes the distal tip of the catheter from a first position to a second position *upon extension* of the distal tip of the catheter from the hollow channel.

By retroflexing the distal tip of the catheter upon extension of the distal tip of the catheter from the hollow channel, the endoscope of the present invention allows for the images obtained by the first and second lenses to be orientated with respect to one another upon deployment of the catheter. In other words, the direction from which the second lens obtains its image is dependent on the direction from which the first lens (fixed to the end of the shaft) obtains its image, namely, rearward and at 180 degrees to the image obtained by the first lens. Further, since the first image lens is fixed to the distal end of the shaft and the second image lens is maintained at a direction of 180 to the first direction of the first image lens, the orientation of the first and second image lenses will be maintained with movement of the shaft. This arrangement is not taught or suggested in the cited references.

The Kaiya '130 patent discloses a parent-son type endoscope system. The parent endoscope is a side view endoscope providing a side view of hollow body organ from first side-view point. See, Kaiya, U.S. Patent 5,178,130, column 3, lines 10-35 and 45-55; column 7, lines 35-40; and column 9, lines 1-5. The son endoscope is also a side viewing endoscope, and is reversibly movable within the channel of the parent endoscope. Id. The son endoscope provides a side view of the hollow organ from a second side-view point. The intent of the endoscope system in the '130 patent is to provide side view of two separate hollow body organs joined sideways to each other, e.g. the duodenum and the bile duct or large and small intestines. In such a situation, the parent endoscope provides a first side view of the duodenum and the sideways opening of the bile duct in order to aid

insertion of the son endoscope into the sideways opening of the bile duct. Specifically, unlike the endoscope of claim 1, the endoscope system in the '130 patent does not include a first image lens *fixedly attached* to its distal end of the shaft that receives a first image in a forward direction.

Additionally, the orientation of a deployed second image lens with respect to the first image lens is not predetermined, i.e. retroflexed and 180 degrees apart. In fact, a circumferential forward and retroflexed view of a hollow organ along an axis parallel to the longitudinal axis of the parent endoscope with the son endoscope in the retroflexed position is not mechanically possible for the structure disclosed in the '130 patent. Consequently, the endoscope in the '130 patent does not insure simultaneous circumferential forward and rear views of a hollow body organ along an axis parallel to the longitudinal axis of the parent endoscope, as required by independent claim 1. It can be appreciated that in order to examine a narrow organ such as a colon, it is highly advantageous for the endoscope system to be capable of providing simultaneous circumferential forward and rear views, as defined in independent claim 1. Further, it is noted that child endoscope in the '130 patent does not retroflex upon extension thereof from the parent endoscope, as required by independent claim 1. Such an arrangement is entirely absent from the '130 patent. As hereinafter described, the teachings of the Yoon '090' and Torri '149' patents cannot cure the deficiencies of the Kaiya '130 patent.

The Torri '149 patent merely discloses a curve control wire for a curved portion of an endoscope. Nothing the '149 patent shows or suggests an endoscope have first and second image lenses immediately orientated upon deployment of one of the lenses. Such a structure is entirely absent from the '149 patent.

The Yoon '090 patent discloses an endoscope having two or more branches. Each branch includes a source of illumination and a lens train, fiber optic bundle or solid state image receiving device. Each of these branches is independently manipulatable or steerable in order to produce an image from a distinct point of view within the body. The images are juxtaposed on a video monitor for simultaneous viewing by a surgeon. According to another aspect of the Yoon '090' patent, as shown in Fig. 1, the endoscope system includes a hollow endoscope body (12) accommodating multiple flexible endoscope branches (14,16,18) .

Initially, it is to be noted that endoscope body 12 does not include a first image lens fixed thereto as required by independent claim 1. Since the endoscope body (12) accommodates multiple flexible endoscope branches (14, 16, 18), there would be no incentive to modify the teaching of Yoon to fix an image lens to endoscope body. Further, since each of these branches in the endoscope disclosed in the '090 patent is independently manipulatable or steerable in order to produce an image from a distinct point of view within the body, the images obtained by the lenses of each branch are not dependent with respect to one another upon deployment. Since the movements of the lenses in the '090 patent are not dependent, movement of one of the branches will require independent movement of a second branch to maintain two lenses at an angle of 180 degrees to each other. This structure differs substantially from the endoscope defined in independent claim 1 wherein the direction from which the second lens obtains its image is dependent on the direction from which the first lens (fixed to the end of the shaft) obtains its image, namely, rearward and at 180 degrees to the image obtained by the first lens. More specifically, in the endoscope defined in independent claim 1, since the direction from which the second lens obtains its image is dependent on the direction from which the first lens obtains its image, the second lens will continue to provide an image in a direction rearward and at 180 degrees to the image obtained by the first lens, even upon movement of the shaft. Yoon does not teach or suggest such an arrangement.

Further, since the image lens is not fixed to the endoscope body or shaft in the '090 patent, the hollow endoscope body in the '090 patent does not have means to be independently advanced into a tortuous hollow body organ such as colon. Consequently, while the endoscope system of Fig. 1 of Yoon '090' patent may be useful in situations where the hollow tubular body can be inserted blindly into a body cavity close to the surface, such as being inserted into peritoneal cavity through a surgical incision on the skin, the same does not hold true for a long and tortuous hollow organ such as colon, to which the endoscope system of the present invention is primarily directed towards.

In view of the foregoing, it is believed that independent claim 1 defines over such references and is in proper form for allowance. Claims 3, 10, 12-13, 15-16, 43-44 and 67 depend either directly or indirectly from independent claim 1 and further define an endoscope not shown or

suggested in the prior art. It is believed that claims 3, 10, 12-13, 15-16, 43-44 and 67 are allowable as depending from an allowable base claim and in view of the subject matter of each claim.

Referring to claim 47, an endoscope system is provided for examination of a hollow body component. The endoscope system includes an endoscope having a diameter, an outer periphery, a steering mechanism and a distal end fixedly housing a first image lens for receiving a first image in a first direction. The endoscope defines a hollow channel therethrough. The first direction is generally forward of and parallel to the longitudinal axis of the distal end of the endoscope and the first image is generally a circumferential view of the hollow body component. A catheter is reversibly received within the channel of the endoscope and has proximal and distal ends interconnected by a bending section therebetween. The bending section retroflexes the distal end from a first position to a second position upon extension of the distal end of the catheter from the hollow channel. A rear view module is adjacent the distal end of the catheter and includes a second image lens. At least a portion of the rear view module receives a second image in a second direction at an angle of generally 180 degrees to the first direction with the distal end of the catheter in the second position. The second image depicts a generally circumferential view of the hollow body component. The first and second images define a field of view within the hollow body component. The second direction is dependent on the first direction. The diameter of the endoscope is greater than the distance between the distal end of the catheter and the proximal section of the catheter with the catheter in the second position. The endoscope is insertable into the hollow body component under the image guidance of the first image and the steering mechanism.

As previously noted with respect to independent claim 1, nothing in either of the cited references show or suggest an endoscope system having an endoscope or shaft that includes a first image lens *fixedly attached* to its distal end thereof and a catheter reversibly received within the channel of the endoscope that includes a bending section which retroflexes the distal end of the catheter from a first position to a second position upon extension of the distal end of the catheter from the hollow channel. As a result, the endoscope system of the present invention allows for the rear view module to be urged from distal end of the hollow channel to provide a circumferential rear view that is substantially at an angle of 180 degrees from the first forward view. As previously

noted, such an arrangement is entirely absent from the cited references. Further, since the direction from which the second lens obtains its image is dependent on the direction from which the first lens obtains its image, the second lens will continue to provide an image in a direction rearward and at 180 degrees to the image obtained by the first lens, even upon movement of the endoscope. The same cannot be said about the endoscopes disclosed in the cited references. Hence, in view of the foregoing, it is believed that independent claim 47 defines over the cited references and is in proper form for allowance.

Claims 49-50 depend either directly or indirectly from independent claim 47 and further define an endoscope system not shown or suggested in the prior art. It is believed that claims 49-50 are allowable as depending from an allowable base claim and in view of the subject matter of each claim.

Claim 54 defines an endoscope including a first lens for receiving a first image in a fixed first direction. The first image is a generally circumferential view of the first direction. A shaft has a diameter and a distal end for fixedly receiving the first lens therein. The shaft defines a hollow channel therethrough. A second lens receives a second image in a second direction. The second direction is at an angle generally 180 degrees to the first direction and the second image is a generally circumferential view of the second direction. A catheter is reversibly received within the channel of the shaft and has proximal and distal ends. The distal end is retroflexed from a first position to a second position upon extension of the distal end of the catheter from the hollow channel. A rear view module is removably received in the hollow channel and houses the second lens. The rear view module is operatively attached to the distal end of the catheter and includes a steering mechanism for moving the distal end of the catheter to the second position upon exit from the hollow channel. The second lens receives the second image in the second direction with the distal end of the catheter being in the second position. The shaft is insertable into the hollow channel under the image guidance of the first image and the steering mechanism of the shaft, independent of the steering mechanism of the catheter.

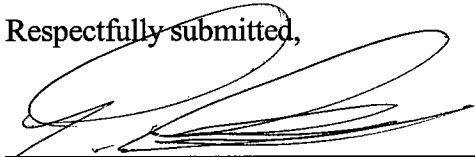
As heretofore described with respect to independent claims 1 and 47, neither of the cited references show or suggest an endoscope wherein the shaft includes a first image lens *fixedly attached* to its distal end that provides a first image that is a generally circumferential forward view of a first direction and a catheter reversibly received within the channel of the endoscope wherein the distal end of the catheter retroflexes from a first position to a second position upon extension of the distal end of the catheter from the hollow channel wherein the second lens receives a second image in a second direction that is a circumferential rear view, at an angle of 180 degrees to the first direction. In addition, unlike the endoscopes in the cited references, the direction from which the second lens obtains its image is maintained at an angle of 180 degrees to the direction from which the first lens obtains its image upon deployment of the catheter. As a result, the second lens will continue to provide an image in a direction rearward and at 180 degrees to the image obtained by the first lens, even upon movement of the shaft. An arrangement not taught or suggested by the art. Consequently, it is believed that the endoscope system of independent claim 54 defines over the cited references and is in proper form for allowance.

Claims 55-57 and 61-66 depend either directly or indirectly from independent claim 54 and further define an endoscope not shown or suggested in the prior art. It is believed that claims 55-57 and 61-66 are allowable as depending from an allowable base claim and in view of the subject matter of each claim.

Applicant believes that the present application with claims 1, 3, 10, 12-13, 15-16, 43-44, 47, 49-50, 54-57 and 61-67 is in proper form for allowance and such action is earnestly solicited. Applicant believes that no fees are due in connection with this Amendment. However, if Examiner considers any fees due in conjunction with this or any future communication, authorization is given to charge payment of such fees or credit any overpayment to Deposit Account No. 50-1170.

Should the Examiner have any questions or comments regarding this Response which would expedite the prosecution of the application, the Examiner is invited to contact the undersigned at the telephone number appearing below.

Respectfully submitted,



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